



ANNOUNCEMENTS

Origin of Life Poster is Tops at RMS: Adrian Tuck coauthored a poster that received top honors at the Royal Meteorological Society's conference "Meteorology at the Millennium," held July 10-14 in Cambridge to commemorate the Society's 150th Anniversary. Adrian and coauthors Christopher Dobson (University of Oxford), Barney Ellison (CU), and Veronica Vaida (CU) presented the poster "Atmospheric Aerosols, Cell Size, and the Origin of Life." The poster presents a theory on how the atmosphere may have participated in the development of life on Earth. It received the award for best research poster at the RMS conference and also sparked a great deal of media interest. An article appeared in the July 15 issue of *New Scientist*, and British

television and the British Broadcasting Corporation covered the story.



Science Festival Slated for September 15-16: School buses will roll in and exhibits will go up for the NOAA Boulder Science Festival, September 15-16 at the David Skaggs Research Center. School visits will take place on Friday the 15th, with Saturday the 16th offering a day of enjoyment and information for the general public. The Festival is part of a series of activities that commemorate NOAA's 30th Anniversary. And for the Boulder NOAA community, it also marks another opportunity to celebrate our (yes, it still seems to be "new") building. Many volunteers are needed; please call Chris Ennis if you'd like to help out.

Aeronomy Lab Hosts Meetings that Look to the Future for NOAA

Participants in two meetings held at the Aeronomy Lab this summer had their sights set on the future of NOAA research endeavors. The meetings, which involved representatives from several NOAA entities as well as other-Agency colleagues, are briefly described below.

Developing a Forecasting Tool of the Future: On August 3-4, the Aeronomy Lab played host to the "Air Quality Forecasting and Prediction Workshop: Monitoring, Measurement, Process, and Data Assimilation." Scientists from throughout OAR (AL, AOML, ARL, ETL, FSL, CMDL, and PMEL), CIRES, Desert Research Institute, and the National Park Service described their respective organization's air quality research and then participated in focused discussions about the tools, measurements, and approaches needed for NOAA to develop operational forecasting tools for air quality. Those scientific capabilities would include, for example, daily forecasting on ozone, particulate matter, carbon monoxide, ultraviolet radiation, and visibility, as well as semi-seasonal to interannual forecasting on ozone, particulate matter, and toxics. The goal of the workshop was to lay out the science plan for a proposed year-2003 Air Quality Forecasting and Prediction budget initiative. Pai-Yei

Whung, an atmospheric scientist in OAR's Office of Scientific Support, coordinated the meeting.

Planning for the Next Decade of NOAA's Research Aircraft Capability: At the request of Rear Admiral Evelyn J. Fields, Director of NOAA's Office of Marine and Aviation Operations, the Aeronomy Lab hosted the initial meeting on the topic of "NOAA's Next Generation of Heavy Research Aircraft." The meeting, held July 18-19, focused on the time frame of the next 5-10 years and discussed anticipated needs in heavy aircraft support for NOAA's airborne research and operational missions. RADM Fields and others from OMAO gathered research input and scientific perspectives that will aid planning and decisions that are imminent with respect to NOAA's aircraft, with the aim of maintaining NOAA's high standard of aircraft capability that fully supports research and operational objectives. A report on the initial meeting will be forthcoming in early fall. Future meetings are anticipated. Representatives from several OAR Laboratories as well as NOAA's National Weather Service, the National Marine Fisheries Service, and the National Environmental Satellite, Data, and Information Service participated in the meeting.



The Texas Air Quality Study-2000



The “No Pain-No Gain” philosophy was put to the test in the launching of the Texas Air Quality Study-2000 (TexAQS-2000) this summer. In early summer, it became clear that an ailing WP-3D aircraft would leave NOAA scientists without their usual set of “wings” for conducting air quality research. Repairs of the P3 were not feasible in time, and the TexAQS schedule was inflexible due to the multi-Agency collaborations involved.

NOAA scientists at the Aeronomy Lab and NOAA and OAR Headquarters put their heads together to come up with a solution. They determined that the National Center for Atmospheric Research (NCAR) Electra could carry the instrument payload and could accomplish flight plans that would address the scientific issues. And both NOAA and NCAR scrambled to find needed resources and personnel to make the flights. The efforts converged to a successful outcome. On August 16, the Electra headed to Houston’s Ellington Field, the Aeronomy Lab’s “home base” for aircraft operations during the mission.

In TexAQS-2000, up to 250 researchers are studying the air quality of a broad region of eastern Texas. Six different research aircraft and over 20 ground stations are being used in the largest air quality study ever conducted in the state of Texas. It’s a multi-agency effort coordinated by the Texas Natural Resources Conservation Commission and conducted in partnership with NOAA, the Department of Energy, NASA, NCAR, other agencies, and universities.

The timing of the study, August 15-September 15,

puts researchers literally on the “hot seat.” Temperatures are often hovering in the 100-plus range (though a “cool spell” in the 90s was encountered by the group in the first week of the mission). When coupled with the high humidity and often stagnant air masses of the region, the weather elixir is frequently ripe for the production of ozone and fine particle pollution. Indeed, the region is struggling to meet the National Ambient Air Quality Standards. TexAQS-2000 is designed to improve the understanding of the factors that control the formation and transport of air pollutants and fine particles along the Gulf Coast of southeastern Texas, thereby providing a sound scientific foundation for air quality planners in the region.

For researchers, it also offers a new twist to the air quality regimes that have been studied in the southeastern U.S. over the last decade (in Alabama, Georgia, and Tennessee). Unlike the “flow-through” meteorology that characterizes inland regions, air masses in the Houston area are often recirculated by the Gulf breezes. So, ozone-laden air masses that flow out of the urban area in the morning can return later in the day. Also, the hydrocarbon mixture in the Houston region comes from automobiles, refineries, and vegetation—a more varied “blend” of sources that will likely yield surprises in the extensive dataset that researchers are gathering for the volatile organic compounds (VOCs).

So, the forecast for TexAQS-2000 is: “hot, humid, with perhaps a sprinkling of surprises.” Music to the ears of air quality researchers.



HOME and AWAY

ACCENT-II Set to Go

Researchers in the Meteorological Chemistry group are preparing for the second installment of the Atmospheric Chemistry of Combustion Emissions Near the Tropopause (ACCENT) mission. Scientists will have two unique sampling opportunities using the NASA WB-57F aircraft. In the first flight, the WB-57F will crisscross the exhaust plume of the Space Shuttle, scheduled to be launched from Cape Canaveral on September 11. The second flight will take off from the San Jose airport in Costa Rica, enabling it to cross the equator and reach 10°S. The Aeronomy Lab payload will include the particle analysis by laser mass spectrometry (PALMS) instrument, as well as instruments for measuring ozone, methane, water vapor, temperature, and pressure. For PALMS, it will be the first chance to see if the rich variety of chemicals in Northern-Hemisphere particles is also found in the Southern Hemisphere. Colleagues from CMDL, NASA, NCAR, and universities will also participate in the ACCENT-II mission.



WHAT'S UP WITH PEOPLE

Kathy Green has left the Aeronomy Lab to devote more time to home and family. She was with the Aeronomy Lab for 8 years, most recently with the Admin Office. **Terry Cookro**, secretary in the Chemistry and Climate Processes group and the Theoretical Aeronomy group, is retiring from federal service on September 30. She worked at the U.S. Geological Survey before joining the Aeronomy Lab in 1996... In the Meteorological Chemistry group: **Steve Ciciora** has transferred to the Atmospheric Chemical Kinetics group, where he is working on electronics and engineering projects. On October 1, **Andy Neuman** will transfer to the Tropospheric Chemistry group, where he will be conducting research using chemical ionization/mass spectrometry instruments... Several scientists have visited the Atmospheric Chemical Kinetics group this summer. **Yinon Rudich** and his student **Tamar Moise**, of the Weizmann Institute in Israel, have been visiting the group to conduct collaborative research for several weeks this summer. **Abdel W. Mellouki**,

of the Centre National de la Recherche Scientifique in France, visited the group to work on joint research publications. **B.S.M. Rao**, of the University of Pune in India, is visiting the group for several weeks... In the Tropospheric Chemistry group, **Rich Dissly** is leaving September 1 to take a position with a local startup company, Blue Star Sustainable Technologies Corporation, where he will do fuel cell research. **Matt Warshawsky** will do programming work part-time for the same company, while continuing his research with the Aeronomy Lab. **Rebecca Washenfelder** will leave the group in September to begin graduate school at Caltech... **Amy Hawes**, an undergraduate at the University of Colorado, is working with the Chemistry and Climate Processes group on spectroscopic observations of the atmosphere. **Klaus Pfeilsticker** will conclude his National Research Council (NRC) appointment with the group in September, when he will return to Heidelberg University in Germany... In the Theoretical Aeronomy group, **Youhua Tang** will conclude his NRC appointment in September. He will begin a postdoctoral position at the University of Iowa this fall... **Hung Nguyen**, a graduate student at CU, is working with the Tropical Dynamics and Climate group to streamline the computer code used to process the wind profiler data. **Pauline Datulayta**, a student at Queens College in New York City, spent 10 weeks this summer working with the group's wind profiler data to study the diurnal cycle of winds over the Galapagos Islands. She was an intern through CU's Summer Multicultural Access to Research Training (SMART) program. **Nickolas Bond**, of the NOAA Pacific Marine Environmental Laboratory in Seattle, visited the TDC group in June to work on joint research projects. **Jeff Nystuyen**, of the University of Washington Applied Physics Laboratory, visited the group to collaborate on new developments in the acoustic measurement of rainfall... We wish everyone the best in their new endeavors, whether here or elsewhere!

COMMUNICATING OUR SCIENCE



To Decisionmakers: Dan Albritton participated in a steering committee meeting regarding long-range planning for the U.S. Global Change Research Program's Subcommittee on Global Change Research, held August 16-18 in Warrenton, Virginia... Dan Albritton, Susan Solomon, and Dan Murphy attended the drafting meeting of the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report, held in Victoria B.C. July 24-29... Dan Albritton attended the July 11-13 Open-Ended Working Group meeting of the U.N. Montreal Protocol on Substances that Deplete the Ozone Layer. Dan presented a report on assessing the ozone depletion potential of short-lived substances, which he coauthored with the Protocol's three other Science Assessment Panel Cochairs. He also discussed plans for the next ozone-layer assessment, which will be completed in late 2002... Fred Fehsenfeld and Jim Meagher attended a June

15 meeting in Silver Spring to discuss planning for a new NOAA budget initiative to develop the tools for air quality forecasts... On June 9, Dan Albritton gave a briefing on climate change to budget staff in NOAA and DOC... On May 31, Dan Albritton, Susan Solomon, and Ravi gave an overview of the Aeronomy Lab's research and future plans at a "mini-review" held at OAR Headquarters in Silver Spring... In April, George Reid gave a presentation on solar variability and sea-surface temperature at a Space Environment Center briefing for Mike Hall (NOAA/OAR Associate Director for Climate Research) on solar variability and climate.

To the Scientific Community: Venues included:

- *Scientific Conferences and Symposia:* Leslie Hartten, Wayne Angevine, and Alison Grimsdell gave presentations and posters at the 14th Symposium on Boundary Layers and Turbulence, held August 7-11 in Snowmass, Colorado... Karl Froyd gave a talk at the International Conference on Nucleation and Atmospheric Aerosols, held in St. Louis August 6-11... Fred Fehsenfeld attended the First International Conference on Trans-Pacific Transport of Atmospheric Contaminants, held July 27-29 in Seattle... Wayne Angevine presented a talk and a poster at the International Geoscience and Remote Sensing Symposium, July 24-28 in Honolulu... Several members of the Atmospheric Chemical Kinetics group gave presentations at the 16th International Symposium on Gas Kinetics, held July 24-30 in Cambridge, UK. Ravi chaired a session at the symposium... Adrian Tuck and Wayne Angevine each presented a poster at the Royal Meteorological Society's "Meteorology at the Millennium" meeting, held July 10-14 in Cambridge, UK... Dave Fahey gave two talks at the Quadrennial Ozone

Special Report Available

The Aeronomy Lab played a leading role in authoring a special report this summer, *Atmospheric Ammonia: Sources and Fate. A Review of Ongoing Federal Research and Future Needs* (June 2000). This report provides a brief overview of the science related to atmospheric ammonia, with the aim of identifying key knowledge and capability gaps that can help to guide the development of future Federal research programs. Ecosystems are sensitive to the deposition of atmospheric ammonia, and ammonia also contributes to the formation of fine particles in the atmosphere. Ammonia emissions are on the rise because of increases in agricultural activities; simultaneously, there is increased attention on the management of fine particles because of concerns about public health impacts and visibility impairment. The report was prepared by the Air Quality Research Subcommittee of the Committee on Environment and Natural Resources (CENR), with Jim Meagher taking the lead on coordinating the drafting and publication. The Office of Science and Technology Policy has cited the report as an example of the CENR "...at its best—finding an area that transcended any one agency, identifying a clear problem with gaps in information and data, and putting together a state of knowledge that can now be used by multiple agencies as they put together their research and development plans related to ammonia."

[A copy of the report can be obtained from the Aeronomy Lab Director's Office (aldiroff@al.noaa.gov).]

Symposium, July 3-8 in Sapporo, Japan. He described the 1997 Photochemistry of Ozone Loss in the Arctic Region in Summer (POLARIS) mission and also presented some results from the 1999 Atmospheric Chemistry of Combustion Near the Tropopause (ACCENT) mission... Bob Portmann attended the Gordon Research Conference on Solar Radiation and Climate in New London, Connecticut, June 25-29... Ann Middlebrook presented a paper at the Air and Waste Management Association's annual meeting, held June 18-22 in Salt Lake City, Utah... Several members of the Meteorological Chemistry group attended the 2000 Conference on the Atmospheric Effects of Aviation Project (AEAP) Annual Meeting, held June 5-9 in Snowmass... Leslie Hartten, George Kiladis, and Kathy Harris gave presentations at the 24th Conference on Hurricanes and Tropical Meteorology, held May 29-June 2 in Ft. Lauderdale... Ned Lovejoy, Karen Rosenlof, and George Reid gave presentations at the Spring Meeting of the American Geophysical Union, May 30-June 3 in Washington, DC.

• **Research Workshops:** Leslie Hartten and Paul Johnston attended the Nauru99 Workshop in Honolulu, July 31-August 2... Fred Fehsenfeld and David Parrish attended a planning meeting for future Global Tropospheric Experiment (GTE) missions, held June 29-30 in Newport News, Virginia... Susan Solomon attended the Climate System Model Workshop, June 26-30 in Breckenridge... Greg Frost and Jim Meagher attended the First Annual EPA Models-3 Workshop in Arlington, Virginia, June 12-14... Ken Gage and Christopher Williams participated in the Tropical Rainfall Measuring Mission (TRMM) Ground Validation Workshop, held at the University of Utah May 22-26. Researchers compared preliminary observations from the TRMM field campaigns and planned future data analysis efforts.

• **Invited Lectures and Seminars:** On July 10, Dave Fahey gave a talk at the Research Center for Advanced Science and Technology, University of Tokyo, on measurements of nitric acid in the stratosphere... In July, George Reid presented two invited lectures in Warsaw, Poland, at the biennial meeting of COSPAR, the International Committee on Space Research. George described trends in temperatures and heights over the western tropical Pacific, and the influence of electrical charging on meteoric dust in the upper atmosphere.

To Media: Aeronomy Lab scientists participated in Media Day activities held August 24 at the site of the Texas Air Quality Study-2000 in Houston (see story p. 2)... Adrian Tuck was interviewed by the print, radio, and television media in conjunction with a poster he coauthored on the atmosphere's possible role in the origin of life (see story p. 1).

To Industry: On July 25, Dave Fahey gave the keynote address at the 4th IIR-Gustav Lorentzen Conference on Natural Working Fluids, held at Purdue University. An audience of over 700 heard Dave speak on "Ozone Depletion and Global Warming: Major Issues of Our Time." Industry engineers, scientists, and managers from throughout

the United States, Europe, and Japan attended the conference... In July, Ken Gage participated in a Cooperative Research and Development Agreement (CRADA) meeting with Radian Corporation and Sonoma Technology. The CRADA, which involves both the Aeronomy Lab and the Environmental Technology Lab of NOAA/OAR, has successfully transferred profiler technology to the private sector over the last 9 years.

To Students and Teachers: Mary Gilles is working with Fairview High School students in a program to help them improve their writing skills... Sandra Laursen served as a support scientist for the Earthworks workshop for middle and high school teachers, which was offered by CIRES June 18-24. She worked with Betsy Andrews of CMDL to help teachers develop an atmospheric chemistry investigation... Chris Ennis consulted on a new ozone-layer teaching module developed by Broomfield Middle School teacher Beverly Meier, who visited the Forecast Systems Laboratory this summer to update and add to NOAA's Student Activities in Meteorology (SAM) teaching materials.

To Our Visitors: On July 13, Chris Ennis hosted the visit of Ken Jones and Debby Kay, of the NOAA/OAR Budget and External Affairs Division in Silver Spring. Ravi and David Fahey gave laboratory tours in conjunction with the visit.

Through Service on Scientific Panels and Boards: Ravi is serving on a National Research Council Panel on "Aeronautics Research and Technology for Environmental Compatibility"... Carl Howard serves on the Regional Air Quality Council's Mobile Sources Subcommittee.

DOWN THE ROAD



August 28-September 1: 63rd Annual Meeting of the American Meteorological Society, Chicago, Illinois.

September 11-12: "Understanding the Stratosphere: Challenges and Opportunities," and "Beyond the Science of Climate Change," Symposia marking the retirement of Jerry Mahlman, Director of the NOAA/OAR Geophysical Fluid Dynamics Laboratory, Princeton, New Jersey.

September 25-29: SOLVE-THESEO 2000 Science Team Meeting, Palermo, Italy. (SAGE III Ozone Loss and Validation Experiment-Third European Stratospheric Experiment on Ozone 2000.)

October 24-26: NARSTO Symposium, "Tropospheric Aerosols: Science and Decisions in an International Community," Querétaro, Mexico.

On the Air! is a quarterly publication of the NOAA Aeronomy Laboratory. It is posted on the World Wide Web at www.al.noaa.gov. Please send comments, suggestions, or questions to: Chris Ennis (phone 303-497-7538; email Christine.A.Ennis@noaa.gov).

